

Supplier Quality System Requirements

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INTRODUCTION

This specification defines supplier quality requirements as agreed upon by the following business entities herein referred to as "Member".

Pratt & Whitney	PW
Pratt & Whitney Canada	P&WC
UTC Aerospace Systems	UTAS

This document employs, as a foundation, International Aerospace Quality Group (IAQG) 9100 - Quality Management Systems - Requirements for Aviation, Space and Defense Organizations. In the Americas, the standard is issued by SAE International, and is published as [AS9100](#). UTC suppliers may use AS9100 or any of the IAQG authorized equivalents (e.g., EN9100 or JIS-Q9100) to meet requirements listed herein.

Suppliers are expected to comply with AS9100 requirements and the additional Member requirements defined herein. In an effort to standardize the use, application, and integration of the UTC-unique requirements with global quality system requirements, the AS9100C paragraph numbering scheme has been used. In this document the term "supplier" is synonymous with the term "organization" as used in AS9100. Paragraphs not listed herein indicate no additional Member requirements associated with said paragraph in AS9100. Where a list within this document uses letters (e.g., a, b, c), the requirement supplements the AS9100 text for the same letter. Where a list within this document uses numbers (e.g., 1, 2, 3) the requirement is additional and unique to UTC.

Where a supplier provides product or service to more than one Member, the requirements contained herein are to be uniquely applied to each individual Member.

Each Member, its representatives, its customers and its customer's governmental agencies and regulatory agencies shall have the right of entry into a supplier's facility or that of their subcontractors, suppliers and/or business partners. Entry shall provide for access to quality system documentation, quality records as well as the ability to conduct audits, verify product and processes.

Note: For guidelines on implementing supply chain best practices, reference IAQG [Supply Chain Management Handbook \(SCMH\)](#).



TABLE OF CONTENTS

1. SCOPE 3

1.1 General..... 3

1.2 Application 3

2 NORMATIVE REFERENCES 5

3 TERMS AND DEFINITIONS 7

4 QUALITY MANAGEMENT SYSTEM 9

4.1 General Requirements..... 9

4.2 Documentation Requirements..... 11

6 RESOURCE MANAGEMENT 12

6.2 Human Resources 12

7 PRODUCT REALIZATION..... 13

7.1 Planning of Product Realization 13

7.2 Customer-Related Processes 13

7.4 Purchasing..... 14

7.5 Production and Service Provision 15

7.6 Control of Monitoring and Measuring Equipment 18

8 MEASUREMENT, ANALYSIS AND IMPROVEMENT 18

8.2 Monitoring and Measurement 18

8.3 Control of Nonconforming Product..... 20

8.5 Improvement..... 20

Table 1: ASQR-01 Applicability Table..... 4

Table 2: Documents Referenced in ASQR-01 5

Table 3: Forms Referenced in ASQR-01 7

Table 4: Communication Forms..... 10

Table 5: Retention Periods for Records Pertaining to the Following Part Types..... 12

Table 6: Minimum Vision Requirements..... 12

REVISION SUMMARY

This document has been significantly revised.

QUALITY MANAGEMENT SYSTEMS – REQUIREMENTS

1. SCOPE

1.1 General

This specification applies to all Original Equipment Manufacturer aerospace suppliers that furnish product, material, processes, or product related services to any of the above Members as a contractual requirement regardless of supplier's industry, regulatory accreditation, or certification status, and each such supplier shall be responsible for ensuring that every member of its supply chain complies with the requirements set forth herein. Members reserve the right to flow down additional requirements to satisfy specific customer and/or business requirements.

1.2 Application

Table 1 defines which sections of this requirement apply based on the specific types of products or services provided by supplier to Member(s). Supplier shall determine their Supplier Type below based upon the types of products delivered to and/or services performed for Member(s) as described in Section 3.0, "Terms and Definitions". Supplier shall then use the Table 1 to complete the appropriate compliance review (see Section 4.1.10). In the event that supplier provides products or services described by two or more Supplier Types, the requirements for each Supplier Type shall apply.

Supplier shall use Table 1 to identify contractual requirements that shall be included on supplier POs when procuring components, raw materials, or services related to products delivered to and/or services performed for Member(s).

Note: *Additional sections may apply to a given supplier based on Member-specific requirements.*



Table 1: ASQR-01 Applicability Table

ASQR-01 Section	Supplier Type					
	BTP - UTC Member Design Part Manufacturer	Design Responsible Supplier	Distributor (any product type)	Special Process Supplier	Calibration or Laboratory Service Provider	Industry Standard Part or Raw Material Manufacturer
All sections prior to 4.0	X	X	X	X	X	X
4.1.1	X	X				X
4.1.2	X	X	X			
4.1.3	X	X	X			
4.1.4				X		
4.1.5	X	X	X	X	X	X
4.1.6	X	X	X	X	X	X
4.1.7	X	X	X	X	X	X
4.1.8	X	X	X	X	X	X
4.1.9 1. – 4.1.9 3.	X	X	X	X	X	X
4.1.10	X	X	X	X	X	X
4.1.11	X	X	X	X	X	X
4.1.12	X	X		X		X
4.1.13	X	X		X		X
4.1.14	X	X	X	X	X	X
4.2.3 1.	X	X	X	X	X	X
4.2.4 1. – 4.2.4 3.	X	X	X	X	X	X
6.2.2 a)	X	X	X	X	X	X
7.1 d)	X	X	X	X		X
7.1.4 1. – 7.1.4 2.	X	X	X	X		X
7.2.2 1.	X	X	X	X	X	X
7.2.2 2.	X	X	X	X	X	X
7.2.3	X	X	X	X	X	X
7.2.3 a)	X	X	X	X	X	X
7.4.1 a)	X		X			
7.4.2 1.	X			X		
7.4.3 1.	X	X	X			X
7.4.3 2.1 – 7.4.3 2.2	X	X	X			X
7.4.3 3.	X	X	X	X	X	X
7.5.1 f) 1.	X	X	X	X		X



ASQR-01 Section	Supplier Type					
	BTP - UTC Member Design Part Manufacturer	Design Responsible Supplier	Distributor (any product type)	Special Process Supplier	Calibration or Laboratory Service Provider	Industry Standard Part or Raw Material Manufacturer
7.5.1 f) 2.1 – 7.5.1 f) 2.5	X	X	X	X		X
7.5.1.1 1. – 7.5.1.1 3.	X	X				X
7.5.2 1.	X			X		X
7.5.2 a) 1.	X			X		X
7.5.2 a) 2.		X				
7.5.2 b)	X	X		X	X	X
7.5.4	X	X	X	X	X	X
7.6 a)	X	X	X	X	X	X
7.6 a) 1. – 7.6 a) 2.	X	X	X	X	X	X
8.2.2 1.	X	X	X	X	X	X
8.2.4 1. – 8.2.4 4.	X	X	X	X	X	X
8.3 b-c)	X	X	X	X		X
8.3 d-e)	X	X	X	X	X	X
8.5.2 f) 1. – 8.5.2 f) 2.	X	X	X	X	X	X

2. NORMATIVE REFERENCES

- 2.1 It is the responsibility of supplier to obtain latest revisions of any documents specified by this ASQR. These documents include, but may not be limited to, the following:

Table 2: Documents Referenced in ASQR-01

Document	Title
AIA/NAS 410	NAS Certification & Qualification of Nondestructive Test Personnel
ANSI/NCSL Z540.3	Requirements for the Calibration of Measuring and Test Equipment
AS5553	Fraudulent/Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition
AS6174	Counterfeit Materiel; Assuring Acquisition of Authentic and Conforming Materiel



Document	Title
AS9100	Quality Management Systems – Requirements for Aviation, Space and Defense Organizations
AS9102	Aerospace First Article Inspection Requirement
AS9103	Variation Management of Key Characteristics
AS9117	Delegated Product Release Verification
AS9120	Quality Management Systems Requirements for Aviation, Space, and Defense Distributors
AS13000	Problem Solving Requirements for Suppliers
AS13001	Supplier Self Release Training Requirements
AS13002	Requirements for Developing and Qualifying Alternate Inspection Frequency Plans
AS13003	Measurement Systems Analysis Requirements for the Aero Engine Supply Chain
ASQR-07.5	Control of Software
ASQR-09.1	Flight Safety Parts Program
ASQR-09.2	UTC Production Part Approval Process (UPPAP)
ASQR-15.1	Foreign Object Damage/Debris Prevention, Handling, Storage, Packaging, Preservation and Delivery
ASQR-20.1	Supplier Sampling Requirements
AWS D17.1	Specification for Fusion Welding for Aerospace Applications
IAQG SCMH	IAQG Supply Chain Management Handbook
ISO 10012	Measurement Management Systems – Requirements for Measurement Processes and Measuring Equipment
ISO 17025	General Requirements for the Competence of Testing and Calibration Laboratories
Nadcap AC 7004	Nadcap: Quality Management System
UTCQR-09.1	Process Certification Requirements
UTC QDL	UTC Qualified Distributor List



Table 3: Forms Referenced in ASQR-01

Form	Title
AS9102 FAI Form 1	Part Number Accountability
AS9102 FAI Form 3	Characteristic Accountability Verification, and Compatibility Evaluation
ASQR-01 Form 1	ASQR-01 Audit Checklist
ASQR-01 Form 2	Process Change Notification
ASQR-01 Form 3	Supplier Communication
ASQR-01 Form 4	Supplier Work Transfer Request
ASQR-01 Form 5	Compliance Gap Analysis
ASQR-01 Form 6	Notice of Potential Quality Escape (NOPQE)
ASQR-01 Form 7	Delegated Quality Representative (DQR) Candidate Application
ASQR-01 Form 8	Letter of Agreement, Delegated Quality Representative Program
ASQR-01 Form 9	Distributor Request
ASQR-09.2 Form 1	UPPAP Approval

3. TERMS AND DEFINITIONS

Note: The Definitions and numbering contained herein are supplemental to the definitions contained in AS9100 and therefore start at number 3.5.

3.5 BTP - UTC Member Design Part Manufacturer

Supplier of products and/or assemblies with Member-designated part numbers as defined on proprietary Member drawings or other technical definitions (also known as Build To Print (BTP) parts).

Note: Castings and forgings are considered BTP - UTC Member Design Parts

3.6 Calibration Service Provider

Organization qualified to perform calibration services on Measuring and Test Equipment (M&TE) used in the production of Member products.

3.7 Delegated Product Release Verification (DPRV) Program

A process whereby a supplier is delegated the authority to act on behalf of the delegating organization to verify and release products/services.



3.8 Design Responsible Supplier

Supplier of products defined by a design/drawing proprietary to that supplier and linked to a Member part number through the use of a Member reference drawing and/or other purchase order (PO) requirements (e.g., Category 1, Source Control, Source Design, Engineered Item).

Note: *Member reference drawings may contain additional Member requirements in addition to supplier's normal requirements.*

3.9 Designated Quality Representative (DQR) Program

The DQR program enables a Member-approved supplier's representative to perform over-inspection activities and release product shipments on behalf of Member DPRV program per AS9117.

3.10 Distributor

Organization carrying out the purchase, storage, splitting and sale of products and not transforming, assembling, or otherwise modifying purchased product.

Note: *Distributors are considered to be suppliers and are required to flow applicable requirements to their supply base per Table 1.*

3.11 Industry Standard Part Manufacturer

Manufacturer of parts for which the design, manufacturing, inspection data, and marking requirements necessary to demonstrate conformity of the part are in the public domain and published or established as part of officially recognized standards (e.g., AN (Air Force-Navy Aeronautical Standard), AS (Aerospace Standard), MS (Military Standard), NAS (National Aerospace Standard)).

3.12 Industry Standard Raw Material Manufacturer

Manufacturer of raw material that conforms to an established industry or national authority-published specification (e.g., AMS material specifications).

3.13 Laboratory Service Provider

Organization qualified to perform testing (e.g., chemical, metallurgical, electrical).

3.14 Special Process Supplier

Supplier that only provides special processes on Member products (i.e. not a part manufacturing supplier).

3.15 Significant-Out-Of-Tolerance

Any out of tolerance M&TE condition exceeding 25% of the product tolerance, when product tolerance is known, or when measured error of the M&TE is greater than two times the calibration tolerance when product tolerance is not known.

3.16 UTC Qualified Distributor List

Listing of distributors that are qualified by UTC to provide product.

4. QUALITY MANAGEMENT SYSTEM (QMS)

4.1 General Requirements

4.1.1 Supplier receiving a PO from Member(s) shall be certified by an IAQG accredited Certification Body (CB) to AS/EN/JISQ 9100.

4.1.2 Supplier shall have documented evidence (e.g., Compliance Matrices, supplier audits) that members of its supply chain are compliant to the applicable requirements of AS/EN/JISQ 9100 and ASQR-01 as defined in Table 1.

4.1.3 All Distributors in the supply chain shall be included on the UTC Qualified Distributor List, or be certified by an accredited CB to AS/EN/JISQ 9100 or AS/EN/JISQ 9120.

4.1.4 Special Process Supplier shall be certified to Nadcap AC7004 or AS/EN/JISQ 9100.

4.1.5 Supplier shall submit Other Party Certificate(s) of Registration or Nadcap Accreditation Certificates/documentation to Member(s) if information has not been entered into the Online Aerospace Supplier Information System (OASIS) or Nadcap databases.

4.1.6 Supplier shall permit Member(s) access to all data in OASIS and Nadcap databases including registration documentation, certification, audit reports, findings, corrective actions, etc. Member(s) may input significant and/or frequent escape data and major audit findings regarding suppliers into the OASIS database feedback process.

4.1.7 Supplier shall notify Member(s) of any changes in its certification, registration, or accreditation within 48 hours of receiving notification of the change.

4.1.8 Suppliers not certified, or with a suspended certification, or demonstrating substandard performance shall be subject to removal from any Member Qualified Supplier List. If the Member elects to continue the business relationship, supplier shall be subject to additional audits and/or product over-inspection by Member or a 3rd party at supplier's cost, in addition to any other rights or remedies available to Member(s) under the contract or law.

4.1.9 Methods of Communication

4.1.9.1 Supplier shall submit [ASQR-01 Form 3](#) for all formal communications and requests with respect to UTC and Member-specific quality requirements unless otherwise listed in Table 4.



4.1.9.2 Supplier shall use [ASQR-01 Form 3](#) for items such as:

- An anomaly noted in a drawing or specification that could result in a nonconformance.
- Clarification or interpretation of a drawing, specification or requirements not requiring formal approval.
- A request for an alternate method to a quality system requirement. Any alternate methods to a quality system requirement shall receive approval from the applicable Member prior to incorporation.

Note: *ASQR-01 Form 3 is not used for a request for disposition of product nonconformance.*

4.1.9.3 Supplier shall adhere to Member submission instructions for [ASQR-01 Form 3](#) and each form listed in Table 4

Table 4: Communication Forms

Form	Name	Clause invoked
ASQR-01 Form 1	<i>ASQR-01 Audit Checklist</i>	8.2.2.1
ASQR-01 Form 2	<i>Process Change Notification</i>	7.2.3.a)
ASQR-01 Form 4	<i>Supplier Work Transfer Request</i>	7.1.4
ASQR-01 Form 5	<i>Compliance Gap Analysis</i>	4.1.10
ASQR-01 Form 6	<i>Notice of Potential Quality Escape (NOPQE)</i>	8.3.d)
ASQR-01 Form 7	<i>Delegated Quality Representative (DQR) Candidate Application</i>	7.5.1.f) 2.3
ASQR-01 Form 8	<i>Letter of Agreement, Delegated Quality Representative Program</i>	7.5.1.f) 2.2;
ASQR-01 Form 9	<i>Distributor Request</i>	7.4.1.a)

4.1.10 Supplier shall comply with the latest revisions of ASQR, UTCQR, Member-specific quality system requirements, and other documents referenced herein.

Supplier shall confirm compliance by performing a documented gap analysis for each new revision of ASQR, UTCQR and Member-specific quality system requirements using [ASQR-01 Form 5](#), Compliance Gap Analysis, or equivalent. Supplier shall ensure gap closure within 60 days of document publication unless otherwise specified in the Member Notification. Supplier shall request and obtain approval from Member using ASQR-01 Form 3 for any deviation from these requirements.



4.1.11 Supplier shall comply with the requirements of [ASQR-07.5](#) when

- it utilizes Manufacturing, Test, or Support Software
- it provides Deliverable Software

Note: *Definitions of Software are contained in [ASQR-07.5](#)*

4.1.12 Supplier that provides Flight Safety Parts shall comply with the requirements of [ASQR-09.1](#) unless otherwise specified by Member.

Note: *Some Member specific designations for Flight Safety Parts (FSP) include Flight Critical Parts, UTAS Flight Safety Part, UTAS Safety Part, P&W Prime Reliable Part, P&WC Critical Part, P&WC Critical Rotating Part, P&WC Engine Structural Integrity Program (ENSIP) Critical Part.*

4.1.13 Management of Process Variation: Supplier shall comply with the requirements of [AS9103](#) and additional requirements within [UTCQR-09.1](#).

Note: *[UTCQR-09.1](#) includes requirements for Member and supplier defined key characteristics.*

4.1.14 Preservation of Product: Supplier shall comply with the requirements of [ASQR-15.1](#) for Foreign Object Damage/Debris Prevention, Handling, Storage, Packaging, Preservation and Delivery.

4.2 Documentation Requirements

4.2.3 Control of Documents

1. Changes to manufacturing documentation (e.g., work instructions, travelers, routers) shall be recorded, dated and traceable to a qualified person making the change (e.g., name, signature, stamp, electronic signature) with a permanent marking method with the original information being legible and retrievable after the change.

4.2.4 Control of Records

1. All electronic records shall be retained, retrievable and readable on storage media capable of maintaining the data integrity for the full retention period.
2. Corrections to records shall be recorded, dated, and traceable to the qualified person making the change using a permanent marking method with the original data being legible and retrievable after the change.
3. The retention periods for records pertaining to the following part types are specified in Table 5:



Table 5: Retention Periods for Records Pertaining to the Following Part Types

Time Period (from time of manufacture)	Description
40 years	Flight Safety Parts, Safety Parts, Flight Critical Parts, ESA parts (P&W, P&WC), Frozen Process Parts (UTAS)
30 years	Manned Space Program Hardware
10 years	All other parts

Note: Radiographs are considered to be part of the inspection record and are retained as defined in Table 5.

6. RESOURCE MANAGEMENT

6.2 Human Resources

6.2.2 Competence, Training and Awareness

- a) Unless otherwise specified, procedures shall be implemented to ensure that eye examinations, including visual acuity and color vision, as applicable, are administered by a medically qualified / trained person to all individuals performing visual inspection, other product acceptance activities and/or M&TE calibration that require visual acuity.
- Intervals shall not exceed one year.
 - Individuals shall be tested in at least one eye, either corrected or uncorrected.
 - Color Perception testing is required one time only. Individuals shall be capable of adequately distinguishing and differentiating colors used in the method for which certification is required, the process being performed or inspection activity.
 - Records shall be retained for each individual.

Note: Vision tests may be substituted for the options listed in the Table 6 providing the equivalence is verified and documented by a licensed optometrist or ophthalmologist.

Table 6: Minimum Vision Requirements

Individual performing ...	Shall be compliant with minimum vision requirements of
Visual inspection (i.e. calibration, non-weld, in-process, layout, dimensional)	Near vision requirements of <ul style="list-style-type: none"> • Snellen 14/18, (20/30), or • Jaeger 2
Visual Inspections on Welds	American Welding Society Standard (AWS) D17.1
Nondestructive Testing (NDT)	Aerospace Industries Association National Aerospace Standard (AIANAS) 410



7. PRODUCT REALIZATION

7.1 Planning of Product Realization

- d) Supplier shall have a defined planning process within which specific deliverables are established, monitored, and tracked to closure, while highlighting and mitigating risks.

Note: *Risk mitigations should be performed early in the planning process and include development of design risk assessment (DFMEA), process risk assessment (PFMEA), and control plan.*

7.1.4 Control of Work Transfers

1. Supplier shall have a documented work transfer process and ensure its application in its entire supply chain.
2. When required by Member:
 - Supplier shall request and obtain approval using [ASQR-01 Form 4](#) prior to any planned work transfers.
 - Supplier shall not interrupt the flow of material from any existing source prior to obtaining Member approval.

Note: *For guidelines on implementing a process for work transfers reference [IAQG SCMH](#).*

7.2 Customer-Related Processes:

7.2.2 Review of Requirements Related to the Product

1. Supplier shall have a documented contract review and approval process that includes: roles, responsibilities, and actions of cross-functional reviewers/stakeholders (e.g., Contracts/Legal, Engineering, Materials, Production, Quality, Sales, Procurement, Packaging, and Shipping).
2. Supplier shall only accept agreements and instructions in writing (e.g., P.O., P.O. supplements/amendments, [ASQR-01 Form 3](#)). Verbal agreements and instructions shall not be construed as approval or authorization.



7.2.3 Customer Communication:

For communication with the Member, Supplier shall have the capability to communicate in English. The following documents shall be in English unless otherwise approved by the Member:

- Quality Manual
- First level Quality procedures
- Process documentation requiring Member approval
- All formal communication (e.g., ASQR, UTCQR and Member-specific Forms, FAI, UPPAP documents)

In cases where Supplier maintains copies in their native language as well as in English, and there is a conflict, the English language document shall take precedence.

- a) Supplier shall notify Member prior to implementation of any change that may affect quality and/or product fit, form or function using ASQR-01 Form 2, including but not limited to changes in ownership, company name, management, obsolescence, or inspection techniques.

7.4 Purchasing

7.4.1 Purchasing Process

- a) Supplier shall request and obtain approval using [ASQR-01 Form 9](#) prior to the use of any distributor not on the [UTC Qualified Distributor List](#) when procuring metals, electronics, and hardware from a distributor.

Note: *Electronics include electrical, electronic, and electro-mechanical components (e.g., connectors, wire, electronic components, terminals, lugs, pc boards, semiconductors). Hardware includes fasteners (e.g., nuts, bolts, rivets, washers, pins, screws, clamps), springs, seals (e.g., o-rings), ferrules, and fittings. Metals include metallic raw materials (e.g., bar, sheet, plate, tube, wire, forging, casting, billet, ingot).*

7.4.2 Purchasing Information

1. POs issued for Member-designed products shall include the statement, "For [Member Name] end use".



7.4.3 Verification of Purchased Product

1. Supplier shall validate physical and chemical properties of metallic raw materials at a minimum frequency of one test per material per supplier within a twelve month period using a laboratory holding A2LA or Nadcap accreditation or by a Member approved supplier.

Note: *Testing requirements are satisfied when materials are procured through the Member's controlled chain of custody (e.g., Laboratory Controlled Source, LCS).*

2. Supplier-Delegated DPRV Programs

2.1 Supplier shall notify Member prior to the implementation of a DPRV program.

2.2 Supplier DPRV program shall comply with the requirements of [AS9117](#) and [AS13001](#).

3. Supplier shall prevent and mitigate the use of counterfeit parts. Supplier shall comply with the requirements of [AS5553](#) for electronic components and [AS6174](#) for non-electronic product. Supplier shall request and obtain approval from Member using [ASQR-01 Form 3](#) prior to the use of shipment of material with broken traceability or material provided from a non-authorized supplier.

7.5 Production and Service Provision

7.5.1 Control of Production and Service Provision

- f) 1. Supplier shall only ship product which is identified with Member acceptance symbols to Member or Member-approved destination.

2. Supplier Participation in Member DQR/DPRV Programs

2.1 Supplier shall comply with [AS9117](#) in defining its minimum system and personnel requirements for both Member DQR and supplier-delegated DPRV programs.

2.2 Supplier shall request and obtain approval for acceptance in Member DQR Programs using [ASQR-01 Form 8](#) once every three years.

2.3 Supplier shall request and obtain approval from the Member for DQR candidates using [ASQR-01 Form 7](#).

2.4 Supplier shall comply with [AS13001](#) for DQR training requirements.

2.5 DQR personnel shall successfully complete supplementary Member product, process and procedural training within the Member required timeframe in order to receive authorization to release product to Member.



7.5.1.1 Production Process Verification

1. A First Article Inspection (FAI) shall be accomplished for all Member product and performed in accordance with [AS9102](#) and the additional requirements below:
 - A replication of product part marking (via photograph or sample) that represents production marking shall be included within the FAI Report.
 - Supplier holding a Member PO is responsible for assuring completion of the FAI Report for all finished part characteristics generated by its supply chain.
 - For an assembly level FAI, all lower level and detail FAI's shall be included in the FAI Report.
 - Supplier shall perform a complete FAI in lieu of a partial (delta) FAI upon Member request.
 - Additional requirements for [AS9102 FAI Form 1](#):
 - *Field 11, Supplier Code*: Record Member assigned Supplier Code.
 - *Field 12, Purchase Order Number*: Record Member Purchase Order Number.
 - Additional requirements for [AS9102 FAI Form 3](#):
 - *Field 14, for each characteristic*: Record type of inspection measuring equipment used (i.e. gage name, type, description, etc.) and inspector identification (e.g., signature, stamp, electronic authorization) to signify the person that accomplished the inspection.
2. UTC Production Part Approval Process (UPPAP)
 - 2.1 Supplier shall implement the UTC Production Part Approval Process per the requirements contained in [ASQR-09.2](#) when invoked by drawing related documents, PO, or any other contractual requirement.

Note: *The FAI requirement may be satisfied prior to approval of [ASQR-09.2 Form 1](#), however production parts require Member approval prior to shipment.*
3. When specified by the Member, supplier shall utilize the Member's online system to capture production process verification data and analysis.



7.5.2 Validation of Processes for Production and Service Provision

1. All Special Process Suppliers in the supply chain shall be Nadcap accredited for the following special processes:
 - Chemical Processing
 - Coatings
 - Heat Treating
 - Materials Testing Laboratories
 - Nonconventional Machining and Surface Enhancement
 - Nondestructive Testing
 - Welding

Note: *Special process categories are defined by Performance Review Institute (PRI), Nadcap or International Laboratory Accreditation Cooperation (ILAC) requirements may be further defined by the Member.*

a) Special Process Supplier Approval

1. Supplier and its supply chain shall use Member approved suppliers when a specific material or manufacturing special process is identified by Member.
2. Design Responsible Supplier shall have a comprehensive special process management program in place for the special processes listed in section 7.5.2. The program shall include maintaining a list of qualified special process suppliers along with their Nadcap approval status. If special process suppliers do not hold Nadcap certification, Design Responsible Supplier shall maintain appropriate oversight of internal and supplier processes including, but not limited to, onsite special process audits, periodic testing of product, and other means to validate product integrity.

- b) Accreditation by either Nadcap or by signatories to the ILAC is required for materials testing laboratories.

7.5.4 Customer Property

Supplier shall return all documents, records, gaging, stamps, or other customer supplied property upon written notification from Member or when business with the Member has ceased.



7.6 Control of Monitoring and Measuring Equipment

- a) Supplier Management Systems for the control of monitoring and measuring equipment shall meet one of the following requirements: [ISO 10012](#), [ISO 17025](#) or [ANSI/NCSL Z540.3](#). If using [ANSI/NCSL Z540.3](#), supplier shall implement the requirements using the [Handbook for the Interpretation of ANSI/NCSL Z540.3](#).
1. The Calibration interval analysis methodology used to maintain the reliability of Measuring and Test Equipment (M&TE) shall meet a minimum 95% reliability for M&TE in-tolerance at the end of their interval schedule.

Note: *Supplier may reference [ILAC-G24](#), [OIML D 10 Guidelines for the determination of calibration intervals of measuring instruments](#) and the [NCSL RP-1: Establishment and Adjustment of Calibration Intervals](#) as guidelines for determining their interval analysis methodology.*

2. Supplier shall document an impact review whenever product is identified with a Significant-Out-Of-Tolerance condition and shall notify the Member if impacted product has been shipped by submitting [ASQR-01 Form 6](#).

8. MEASUREMENT, ANALYSIS AND IMPROVEMENT

8.2 Monitoring and Measurement

8.2.2 Internal Audit

1. Supplier that receives a Member PO shall conduct compliance audits of ASQR-01 and Member-unique requirements at least once every 12 months. [ASQR-01 Form 1](#) or Member online system shall be used to complete the audit with the appropriate supplier documents identified that demonstrate compliance to this requirement and made available for Member review.



8.2.4 Monitoring and Measurement of Product

1. Supplier shall comply with the requirements of [ASQR-20.1](#).
 - 1.1 Supplier may use [AS13002](#). as an alternate means of complying to [ASQR-20.1](#) when planning to implement alternate inspection frequency plans where characteristics are not inspected 100% of the time (i.e., acceptance sampling)
 - 1.2 Supplier shall request and obtain approval of alternate inspection frequency plans from Member using [ASQR-01 Form 3](#). The request shall include information as defined by the Alternate Sampling Approval Process in [ASQR-20.1](#) or a form meeting the intent of the example in [AS13002](#). Section 6 Appendix – Forms.
2. Supplier shall have a process in place that ensures monitoring and measurement equipment selected for use in the verification of product is appropriate and effective for the application (reference [AS13003](#)).

Note: Refer to [ASQR-20.1](#) for determination of critical, major, and minor features (characteristics)

- 2.1 Supplier should select M&TE with an accuracy ratio of 10 to 1 (product tolerance to M&TE tolerance) however, accuracy ratios as low as 4 to 1 are acceptable unless otherwise specified. Use of M&TE with accuracy ratios less than 4 to 1 are not permitted unless a detailed measurement uncertainty analysis in accordance with [ANSI/NCSL Z540.3](#) indicates an uncertainty ratio of 1.5 to 1 or better, and the measurement process is maintained under statistical quality control.
- 2.2 Supplier shall perform MSA on all measurement systems used to measure KCs as defined in [UTCQR-09.1](#);
 - Supplier shall comply with the requirements of [AS13003](#) Table 2 with the following exception:
The acceptable precision to tolerance ratio (Gage R&R) for KCs is $\leq 20\%$.
 - Where UPPAP is not invoked, supplier shall request and obtain approval from Member if unable to meet the requirements of [AS13003](#) Table 2 by submitting [ASQR-01 Form 3](#) supplemented with [AS13003](#) Appendix B – Inspection Limitation Form or equivalent.
3. Where inspection lighting requirements are not specified by Member, supplier shall have defined lighting requirements and environmental control for consistent visual inspection (e.g., appropriate lighting intensity, defined work station parameters and verification frequency, distance to product being inspected).
4. Where visual acceptance is performed, lighting intensity shall be verified with calibrated instrumentation. Records of verification and control shall be maintained with a minimum verification frequency of two times per year.



8.3 Control of Nonconforming Product

- b) Nonconforming product that can be reworked to meet all product requirements within the existing manufacturing process are not required to be submitted to Member for disposition. All rework shall have documented work instructions. This provision does not apply to product controlled under Frozen Process Control (e.g., ESA, EFP parts).
- c) Product dispositioned as scrap shall be physically rendered unusable within 30 days unless otherwise instructed in writing, by the applicable Member.
- d) Supplier shall inform Member within 24 hours of discovery of suspect nonconforming product having been shipped regardless of destination. [ASQR-01 Form 6](#) shall be the method of communication, unless otherwise dictated by Member.
- e) Containment actions shall remain in place until corrective action is implemented and proven effective per 8.5.2 f).

8.5 Improvement

8.5.2 Corrective Action

- f) Supplier shall have a root cause and corrective action process consistent with 8D methodology in [AS13000](#).
 - 1. Upon implementation of corrective action, to ensure effectiveness, supplier shall have a documented process in place to ensure that 100% over-inspection (i.e. additional independent measurement of the affected characteristic(s)) is performed of the deviated characteristics for a minimum of the next (3) three consecutive manufactured lots (quantities of parts produced under conditions that are considered uniform) unless otherwise specified by the Member.
 - 2. In the event of a significant escape, repeated escapes or concessions, Member may assign Key Characteristic requirements as specified in [UTCQR 09.1](#).

***** End of Document *****